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ings are held once a month, at which essays are read or topics of natural science discussed. At the society's rooms free popular lectures are given weekly. The society would be very grateful for any assistance rendered by individuals or older societies in enlarging its museum and library.

— Dr. Günther exhibited, at a late meeting of the Zoölogical Society of London, a male, female, and young specimens of a minute Australian animal (*Antechinus minutissimus*), which may be regarded as a marsupial shrew mouse; it is the smallest known Australian mammal. The female was remarkable as having seven young in the marsupium and only four mammæ.

— A number of undergraduates in the Tennessee Agricultural College of East Tennessee University, at Knoxville, have organized a science club, which meets fortnightly. The club promises to become a useful agent in diffusing an interest in the study of natural history throughout the college. At present the most popular subjects with the members of the club are entomology and botany, in both of which collections have been begun.

— Mr. Darwin is engaged upon a work on the comparative results of the cross-fertilization and self-fertilization of plants.

— The Harvard College Summer School of Geology, under the direction of Prof. N. S. Shaler, director of the Geological Survey of Kentucky, will afford geological students an opportunity of working over the area extending from the Cumberland Mountain to the Black Mountains of North Carolina, a region rich in geological, botanical, zoölogical, and archæological interest. We have received the final directions for the guidance of students of the school, which gives full details as to the expenses of the trip to Cumberland Gap, and the mode of reaching the camp. The tickets from Boston and return will be $44, the admission fee $50, including wagons, tents, and instruction. Board will be $5 a week. This is a favorable opportunity for other than geological students to travel in an inexpensive way through one of the most interesting mountain regions in the country.

— The work of the Geological Survey of Brazil is now being carried on by Professor Hartt in the interior; not being in direct communication with Rio Janeiro, letters and parcels should be sent to the secretary of the survey, Major O. C. James, Caixa no Correlo, No. 126, Rio de Janeiro, Brazil.

PROCEEDINGS OF SOCIETIES.

National Academy of Sciences. — April 18-20. Mr. L. H. Morgan began his paper entitled A Conjectural Restoration of a Pueblo of the Mound Builders, with the remark that "a conjecture is sometimes worth the time spent upon it." It is necessary first to consider carefully some practices and usages of the aborigines which were general among them over wide areas. We find that in all parts of America they usually constructed what may be called joint-tenement houses. We find these houses occupied by a number of related families. They practiced communism in living. The marriage relation was simply pairing. They also followed certain customs, which may be designated as the law of hospitality. The land was owned in common by families and households. Those that had fully reached this method of living have been called Village Indians. Mr. Morgan thinks that the Mound Builders were probably Village Indians from New Mexico. Their arts as shown by their implements, their copper tools, their textile and fictile fabrics, were in advance of the Indian tribes found east of the Mississippi.

We find in Yucatan and Chiapas the highest type of Village Indian life. It declines as we advance northward to Mexico and New Mexico. It was best adapted to a warm climate. The attempt to transplant this mode of life from the Rio Grande or the San Juan, first to the Gulf of Mexico and then northward to the Ohio, must have been a doubtful experiment from the start. Nevertheless, the structures left by the Mound Builders indicate such an attempt; their earthworks may be regarded as the dwelling sites of Village Indians. It is certain that if a sensible use for these embankments can be discovered, the mystery about them will be dispelled. The theory that they were built for religious purposes is exceedingly improbable; the magnitude of the works, considering their grade in civilization, indicates that these Indians were laboring for themselves, not for their gods. If a tribe of Village Indians, with their acquired habits of living, emigrated to the valley of the Ohio, they would find it impossible to construct adobe houses. Some modification of the plan and character of the house would be necessary, because of the difference of climate. They might have used stone, but they did not; no stone houses had been built by these tribes. They might have made a house of inferior character upon the level ground, like the timber-framed houses of the Minnitarees. Lastly, they might have raised embankments of earth and built houses on their summits; and this, it is respectfully submitted, is what they did.

The elevated platform is a feature of the adobe houses of New Mexico; it appears also in the Yucatan dwellings. Let us regard the high bank-works on the Scioto River as a pueblo. It is an octagonal inclosure of nine hundred feet square, with an opening at each angle and in the centre of each side. The embankments are now fifty feet thick at the base, and ten or eleven feet high. If reformed with their own materials, they would produce embankments like a railway grade, thirty-seven feet wide at the base, ten feet high, and with summit platforms twenty-two feet wide. These, then, were the sites of their houses. There are six of these embankments, each four hundred and fifty feet long, and one of nine hundred feet. On the inside, before each opening, there is a mound. If the openings were gateways defended by palisades, the whole structure became a fortress. We have now to suppose that the buildings were of timber, on the summits of the embankments, and uniform with the latter in slope. The walls of the buildings were coated with earth, and probably rose ten or twelve feet above the embankments, thus making a continuous sloping rampart twenty feet high. This form of house would harmonize with the prevailing architecture of the Village Indians; but a knowledge of the actual shape of the houses or of their interior arrangements, is not necessary to the hypothesis. The Minnitaree and Mandan Indians surround their houses with a wall of split timber, coated with earth. It may be pointed out that such structures on the edge of embankments could not be successfully assailed from without, either by Indian weapons or by fire.

Mr. Morgan exhibited a ground plan for such buildings, showing how they might have been readily constructed, and would perhaps contain from two to three hundred families, on the communal plan, and serving the purposes of their former mode of life. In fact, the mode of life necessarily determined the form of architecture. We need not discuss the uses or objects of the inclosure formed by the circular embankments. It is not improbable that it was the Village garden. But this mode of life was after all not adapted to the climate, and these emigrants eventually succumbed in the struggle for existence. There is evidence of the better adaptation of such a life to warmer climates, from the fact of the longer continuance of the Village Indians in Mexico, and especially in Central America.

Major Powell has long made Indian structures a study. He mentioned that several of his observations indicated that where tribes had made an advance in civilization, their tendency was toward the communal or pueblo form of buildings; this is indicated by the comparative age of the ruins, the most ancient not being inclosed at all, while the latest were surrounded by cliffs or walls. The age is determined chiefly by the thickness of the covering *débris*. Major Powell is inclined to believe that many of the cliff houses were built for refuge during the Spanish invasion, and such is the tradition among the Indians. Among some of the Utes the land of existence after death is placed beyond the mountains; but among the Pueblos heaven is an architectural affair; it is in the second or third story.

Professor Marsh approved the conclusions of Mr. Morgan, and brought fresh evidence to support them from an entirely different source. In a long series of comparisons of Indian skulls, Professor Marsh has been much struck by the similarity between those of the Pueblo Indians and of the Mound Builders. As the shape of the Mound Builder's skull is very peculiar, the coincidence is a very striking one. Professor Newberry added a few remarks about the buildings on the table lands, which he said were possibly six hundred or seven hundred years old, while trees growing over the skeletons of the Mound Builders had been ingeniously shown by General Harrison to indicate an antiquity of not less than eight hundred years.

Boston Society of Natural History. — April 5th. Prof. A. Hyatt read a paper on The Relations between the Commercial Sponges of the Mediterranean and Caribbean Seas.

April 19th. Dr. B. Joy Jeffries remarked on Muscular Action associated with Vision.

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SCIENTIFIC SERIALS.[1]

Monthly Microscopical Journal. — May. Note on the Markings of *Navicula rhomboides*, by J. J. Woodward. Some Results of a Microscopical Study of the Belgian Plutonic Rocks, by A. Rénard. A New Microscopic Slide, by E. Vanden Broeck. Measurements of Möller's Diatomacean Probe Platten, by E. W. Morley. — June. On the Markings of the Body-scales of the English Gnat and the American Mosquito, by J. J. Woodward. Remarks on *Frustulia saxonica*, *Navicula rhomboides*, and *N. crassinervis*, by Charles Stodder. On the Measurement of the Angular Apertures of Object-Glasses, by Jabez Hogg.

The Geographical Magazine. — May. The Arctic Expedition, vii. Prospects for the Campaign of 1876. The Island of Sokotra. Ferghana. New Maps of Mongolia.

Proceedings of the Royal Geographical Society, London. — February 23d. Lieutenant Cameron's Arrival at the West Coast of Africa. Letters detailing the Journey of the Livingstone East Coast Expedition from Lake Tanganyika to the West Coast of Africa. Stanley's Letters on his Journey to Victoria Nyanza and Circumnavigation of the Lake. Note on the Height of the Victoria Nyanza, by C. George. April 7th. Captain the Hon. G. Napier's Journey on the Turcoman Frontier of Persia, by F. Goldzmid. Extracts from Mr. Margary's Diary.

Canadian Naturalist, vol. viii., No. 2. On the Nipigon or Copper-Bearing Rocks of Lake Superior, etc., by J. W. Spencer. Notes upon the Superficial Deposits of Ontario, by D. F. H. Wilkins. New and Interesting Insects from the Carboniferous of Cape Breton, by S. H. Scudder. On the Mollusca of the Post-Pliocene Formation in Acadia, by G. F. Matthew.

The Geological Magazine. — June. The Vertical Range of Graptolites in Sweden, by G. Linnarsson. Correlation of the Graptolitic Deposits of Sweden with those of Britain, by H. A. Nicholson.

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[1] The articles enumerated under this head will be for the most part selected.